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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,814	05/24/2007	Emmanouil Spyrou	295428US0PCT	4634

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EXAMINER	
LEONARD, MICHAEL L	
ART UNIT	PAPER NUMBER
1796	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/591,814	SPYROU ET AL.	
	Examiner	Art Unit	
	MICHAEL LEONARD	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/20/2007; 06/30/2007; 05/07/2007; 12/04/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 25 provides for the use of a solid polyurethane composition, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 25 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 7-10, 12, 16, 18-20, and 22-25 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,914,115 to Spyrou et al.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

As to claim 1, Spyrou discloses a polyurethane powder coating composition containing a uretdione-containing poweder coating hardener dervived from aliphatic, (cyclo)aliphatic or aromatic polyisocyanates and hydroxyl containing compounds having a melting point from 40 to 130°C with a free NCO content of less than 5% by weight and a uretdione content of 6-18% by weight. Spyrou further discloses reacting a hydroxyl-containing polymer having a melting point from 40 to 130°C and OH number between 20 and 200 mg KOH/gram in the presence of a catalyst of the formula $[NR^1R^2R^3R^4]^+[R^5]^-$ in which R1-R4 simulatenously or independently of one another are alkyl, aryl, aralky, herteroaryl, or alkoxyalkyl radicals and R5 is either OH or F (Column 2, lines 41-59). Spyrou further discloses optional reactive compounds that can react with any acid groups and other auxiliaries and additives known from powder coating chemistry (Column 2, lines 61-65). Spyrou further discloses reacting the ingredients in an edge

runner mill and then homogenzing in an extruder at up to 130°C and then cooling the product (Column 8, lines 62-67).

As to claim 7, Spyrou discloses reaction temperatures of 130°C (Column 8, line 65).

As to claim 8, Spyrou discloses suitable polyisocyanates such as HDI, IPDI, MPDI, TMDI, MDI and TMXDI (Column 4, lines 55-64).

As to claim 9, Spyrou discloses the reaction of the free NCO groups with hydroxyl-containing monomer or polymers such as polyesters, polythioethers, polyethers, or low molecular mass di-, tri-, or tetraalcohols as chain extenders and if desired monoamines and monoalcohols as chain terminators (Column 5, lines 1-6).

As to claim 10, Spyrou discloses hydroxyl-containing polymers used for component B such as polyesters, polyethers, and polyacrylates having an OH number of 20-200 KOH/gram (Column 5, lines 21-23).

As to claim 12, Spyrou discloses trimethyammonium fluoride, etc. as suitable catalysts (Column 6, lines 10-23).

As to claim 16, Spyrou discloses other reactants such as EPIKOTE 828 and phenylenebisoxazoline that may be used in the composition (Column 7, lines 1-10).

As to claim 18, Spyrou discloses additional leveling agents, light stabilizers, and other auxiliaries (Column 7, lines 21-25).

As to claims 19 and 20, Spyrou discloses an extruder apparatus (Column 8, line 64).

As to claim 22, Spyrou discloses a reaction temperature of 130°C (Column 8, line 64).

As to claims 23-25, Spyrou discloses a polyurethane powder coating composition containing a uretdione-containing poweder coating hardener dervived from aliphatic, (cyclo)aliphatic or aromatic polyisocyanates and hydroxyl containing compounds having a melting point from 40 to 130°C with a free NCO content of less than 5% by weight and a uretdione content of 6-18% by weight. Spyrou further discloses reacting a hydroxyl-containing polymer having a melting point from 40 to 130°C and OH number between 20 and 200 mg KOH/gram in the presence of a catalyst of the formula $[NR^1R^2R^3R^4]^+[R^5]^-$ in which R1-R4 simulatenously or independently of one another are alkyl, aryl, aralky, herteroaryl, or alkoxyalkyl radicals and R5 is either OH or F (Column 2, lines 41-59). Spyrou further discloses optional reactive compounds that can react with any acid groups and other auxiliaries and additives known from powder coating chemistry (Column 2, lines 61-65). Spyrou further discloses reacting the ingredients in an edge runner mill and then homogenzing in an extruder at up to 130°C and then cooling the product (Column 8, lines 62-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-6 and 21 are rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 6,914,115 to Spyrou et al. that has been explained above and is applied here as such in view of U.S. Patent Pub. No. 2004/0059081 to Wenning et al. or U.S. Patent Pub. No. 2002/0151670 to Wenning et al.

As to the claims, Spyrou is silent on when the catalyst is added to the extruder in order to control the reaction rate.

Wenning ('081) discloses in the preparation of uretdione containing polyurethane composition the use of extruder composed of 10 barrels with are kept at control temperatures by way of 5 heating zones and wherein there are two or more product streams that are metered in and the sequence of the product streams, including the catalyst may be varied, and the entry point form the product streams may be different (0050-0056). Wenning ('670) discloses in the preparation of uretdione containing polyurethane composition the use of extruder composed of 10 barrels with are kept at control temperatures by way of 5 heating zones and wherein there are two or more product streams that are metered in and the sequence of the product streams, including the catalyst may be varied, and the entry point form the product streams may be different (0048-0054). Both patent documents disclose the same extruder with different temperature ranges and different entry points of the individual reactants so as to form a final polyurethane product with desired characteristics. The location of where the catalyst is metered in, ranges from 1-100% of the length of the extruder and thus overlaps the claimed ranges of instant claims 2-6. At the time of the invention it would have been obvious to a person of ordinary skill in the art to meter in the catalyst as

disclosed by patent documents '081 and '670 in order to control the reaction rate of the product, to avoid unwanted side reactions and to create a sufficient homogenous mixing of the reactants to produce a yield of at least 99% ('670, 0047) of the final product. Wenning ('670) further discloses a residence time of less than 5 min. (Claim 20).

Claim 11 is rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 6,914,115 to Spyrou et al. that has been explained above and is applied here as such in view of U.S. Patent No. 5,508,372 to Brahm et al.

Spyrou fails to disclose the claimed metal based catalyst. Thus, attention is directed towards the Brahm reference. Brahm discloses prepolymers containing free isocyanate groups (Abstract). Brahm discloses various catalysts suitable for the formation of polyurethanes, wherein Brahm recognizes alkali metal hydroxides, such as sodium hydroxide (Column 6, line 54), as functionally equivalent to catalysts such as tetraalkyl ammonium hydroxides of Spyrou. Thus, since the two types of catalysts were art recognized equivalents at the time of the invention, one of ordinary skill in the art would have found it obvious to substitute sodium hydroxide for tetralkyl ammonium hydroxides in the composition of Spyrou.

Claim 14 is rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 6,914,115 to Spyrou et al. that has been explained above and is applied here as such in view of U.S. Patent No. 7,019,088 to Lehmann et al.

Spyrou fails to disclose the catalysts of instant claim 14.

Lehmann discloses in the preparation of polyaddition compound which comprises uretdione groups the use of zinc acetlyacetonate as the desired catalyst (Column 4, lines 1-4).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to substitute the catalyst of Lehmann for the catalyst of Spyrou because both documents disclose the preparation of polyaddition compounds containing uretdione in order to accelerate hardening (Column 3, lines 37) in the preparations in order to arrive at the products and processes of applicants' claims with the expectation of success in the absence of a showing of new or unexpected results.

Claim 15 is rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 6,914,115 to Spyrou et al. that has been explained above and is applied here as such in view of U.S. Patent No. 5,189,117 to Hefner Jr.

Spyrou fails to disclose the particular catalyst of claim 15.

Hefner discloses a polyurethane composition wherein suitable catalysts can be selected from quaternary phosphonium and ammonium compounds such as tetrabutylphosphosphonium acetate and tetramethylammonium hydroxide (Column 32, lines 43-55).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to substitute the catalyst of Hefner for the catalyst of Spyrou because they are functional equivalents as disclosed by Hefner. It is prima facie obvious to substitute equivalents, motivated by the reasonable expectation that the respective species will

behave in a comparable manner or give comparable results in comparable circumstances.

Claims 1, 7-10, 13, 16-17, and 23-25 are rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 5,786,419 to Meier-Westhues in view of U.S. Patent No. 5,728,789 to Wamprecht and U.S. Patent No. 4,503,226 to Tang et al.

As to claims 1, 7-10, 13, 16-17, and 23-25, Meier-Westhues discloses a polyurethane composition comprising the addition polymerization compounds which contain uretdione groups and optionally free isocyanate groups and which are based on aliphatic and/or cycloaliphatic diisocyanates, such as HDI and IPDI, that have a uretdione group content of 3 to 17% by weight and melting point of 40 to 125°C and which have a free NCO group content of 0 to 2% by weight (Column 4, lines 24-45). Meier-Westhues further discloses tertiary amines in catalyst mixtures (Column 7, lines 2-4). Meier-Westhues further discloses hydroxyl-group containg compounds which have an hydroxyl number of 25-200 and a melting point of from 40 to 130°C (Column 4, lines 6-13). Meier-Westhues further discloses in the polyurethane composition the use of glycidyl ethers based on bisphenol A (Column 6, lines 28-29) and the use of terephthalic acid (Column 5, lines 25-40).

Meier-Westhues fails to disclose the particular catalyst of claims 1 and 13. However, Wamprecht discloses employment of quaternary ammonium compounds along with catalysts disclosed by Meier-Westhues in curable polyurethane compositions for the purpose of improving stove times and temperatures (Column 5, lines 3-22) and

Tang disclose tetrabutylammonium benzoate to be one such acceptable equivalent quaternary ammonium compound that functions as a catalyst in isocyanate chemistry (Column 3, lines 22-30).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to have employed the equivalent tetrabutylammonium benzoate catalyst of Tang as the quaternary ammonium catalyst that Wamprecht employed as a catalyst in the preparations of Meier-Westhues for the purpose of enhancing stoving times and temperatures in the preparations in order to arrive at the products and processes of applicants' claims with the expectation of success in the absence of a showing of new or unexpected results. Additionally, it is prima facie obvious to substitute equivalents, motivated by the reasonable expectation that the respective species will behave in a comparable manner or give comparable results in comparable circumstances.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 7-10, 13, and 16-25 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-15 of copending Application No. 10/836407. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the application disclose the composition and preparation of curable polyurethanes having melting points as claimed comprising curing agents having uretdione groups and being derived from isocyanates and hydroxyl compounds and having NCO content and uretdione group content values as claimed and catalysts meeting those of applicants' claims, provides for chain terminators, additional catalysts, and other materials as required by the claims, wherein the difference resides in overlap in specific selections of materials and group contents to degrees that would have been obvious to one having ordinary skill in the art operating within the teachings of the claims of the application for the purpose of obtaining acceptable products in order to arrive at the processes and products of applicants' claims with the expectation of success in the absence of new or unexpected results attributable to specific differences in applicants' claims.

Claims 23-25 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-21 of copending Application No. 10/958357. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the application disclose the composition and preparation of curable polyurethanes having melting

points as claimed comprising curing agents having uretdione groups and being derived from isocyanates and hydroxyl compounds and having NCO content and uretdione group content values as claimed and catalysts meeting those of applicants' claims, provides for chain terminators, additional catalysts, and other materials as required by the claims, wherein the difference resides in overlap in specific selections of materials and group contents to degrees that would have been obvious to one having ordinary skill in the art operating within the teachings of the claims of the application for the purpose of obtaining acceptable products in order to arrive at the processes and products of applicants' claims with the expectation of success in the absence of new or unexpected results attributable to specific differences in applicants' claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL LEONARD whose telephone number is (571)270-7450. The examiner can normally be reached on Mon-Fri 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MICHAEL LEONARD/
Examiner, Art Unit 1796

/Randy Gulakowski/

Supervisory Patent Examiner, Art Unit 1796